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VASCULAR DISEASE

GLYCOSYLATED HEMOGLOBIN AND ARTERIAL STIFFNESS IN NONDIABETIC HYPERTENSIVES

ACC Poster Contributions
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Background: Arterial stiffness, which is a predictor of cardiovascular risk, has been shown to correlate with glycemic control in diabetics. However, it is unclear whether the association of hemoglobin A1c (HbA1c) levels with arterial stiffness remains in nondiabetic hypertensives. We assessed the hypothesis that arterial stiffness is associated with glycemic control in nondiabetic hypertensives.

Methods: We enrolled 1153 consecutive essential hypertensives (mean age 52.5±11.7 years, 684 males) who did not have history of diabetes or cardiovascular disease. Arterial stiffness was determined with carotid-femoral pulse wave velocity (PWV) using the Complior® device. HbA1c was measured in whole blood samples.

Results: In multivariable regression analysis, HbA1c exhibited significant positive association with PWV, which was independent of age, gender, mean blood pressure, smoking habits, body-mass index, waist to hip ratio, blood glucose, low-density lipoprotein, triglycerides, high-density lipoprotein and C-reactive protein ($p<0.001$, adjusted R^2 of model=0.367). In further analyses, we employed dichotomous outcome variable (PWV ≥75th percentile [8.98 m/s]). The area under the curve and 95% confidence intervals (CIs) of the receiver operating characteristic curve for HbA1c for prediction of significant arterial stiffness (PWV ≥75th percentile [8.98 m/s]) was AUC=0.71 (95% CI: 0.67-0.74, $p<0.001$). For HbA1c values of less than 5.0% (n=439), 5.0 to less than 5.5% (n=187), 5.5 to less than 6.0% (n=371), 6.0 to less than 6.5% (n=142), and 6.5% or greater (n=14), the multivariable-adjusted logistic regression (with 95% CIs) for significant arterial stiffness was 1.484 (0.858-2.568, $p=0.158$), 1.00 (reference), 2.290 (1.545-3.396, $p<0.001$), 2.647 (1.558-4.497, $p<0.001$), and 2.722 (0.729-10.172, $p=0.136$), respectively.

Conclusion: Higher HbA1c is an independent predictor of increased arterial stiffness in nondiabetic hypertensives. Furthermore, our findings suggest a possible J-shaped association curve between glycemic control and arterial stiffness and eventually cardiovascular risk, that warrants further investigation.